Innovation Configuration Map: Clarifying Effective Mathematics Teaching Practices

Developing a culture of organizational learning and collaborative communities of practice is among the greatest challenges and goals of any instructional leader – district or building administrator, curriculum specialist, instructional coach, or teacher-leader. The use of reflective tools can guide instructional leaders as they grapple with the complexities of building and sustaining ongoing collaborative learning. This document provides a suite of such tools to help instructional leaders enact and foster systemic change by creating the kinds of district, school, and classroom environments needed to prepare students for success. Regular application of these tools helps leaders determine needs, plan actions, measure the impact of those actions and support others through organizational change.

A change, or innovation, can assume several different configurations that encompass the ideal state envisioned by its designers and different variations arising from user interpretation and experience. Innovation Configuration (IC) maps are descriptive documents that provide clarity by detailing what an innovation should look like in practice. IC maps detail the *how* and *what* of an innovation and provide a way to understand the possible progression of behaviors. These maps are useful not only throughout the change process, but also once an innovation is fully implemented and leaders strive to maximize outcomes. IC maps allow educator teams to develop a common understanding of effective behaviors, identify where additional support is needed, and encourage self-reflection and self-assessment. It is important to note that IC maps are not intended as evaluative tools. Instead, they are a means to assess and measure the various forms of innovation implementation and inform goal setting and next steps. Inherent in the productive use of IC maps is the need to openly share their purpose and intent and use results to enhance collaboration in ways that allow all voices to contribute.

The following IC maps, organized around four of the eight National Council of Teachers of Mathematics' effective math teaching practices,– *Implement tasks that promote reasoning and problem solving, Use and connect mathematical representations, Elicit and use evidence of student thinking,* and *Pose purposeful questions* – give instructional leaders purposeful opportunities to pause, reflect, and compare current practice to organizational values and expectations.

Instructional leaders can use these tools in ongoing continuous improvement efforts to –

- Initiate or focus the conversation about instructional leadership.
- Examine the current state of instructional leadership in a district or school.
- Design or strengthen existing district or school structures for collaboration and learning.
- Support job-embedded professional leadership growth and development.
- Guide decision-making about how to leverage instructional leadership to improve teaching and learning.

You can further your understanding of the research-based teaching practices covered in the IC maps by reading the National Council of Teachers of Mathematics' book, Principles to Actions: Ensuring Mathematics Success for All and continue your learning on the purpose and use of IC maps by watching this video.

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4. Facilitate meaningful mathematical discourse. (Select and sequence student work[1] for classroom analysis and discussion that will ensure progress toward mathematical goals; Facilitate purposeful discourse to develop understanding of key mathematical ideas essential to the learning goals)				
Level 1	**Level 2**	**Level 3**	**Level 4**	**Level 5**
Teachers: ● Use learning goals[2] to select and sequence student work samples that target anticipated strategies and misconceptions. ● Use selected student work for analysis and discussion to advance students' understanding of key mathematical ideas. ● Follow student explanations closely and ask probing questions to facilitate the discourse from the periphery of the conversation. ● Facilitate conversations between students by: o Waiting for students to ask questions and clarify the thinking of others; o Allowing students to defend and justify their approaches with little or no prompting; and o Asking students to compare and contrast strategies used in student work. ● Ensure progress toward learning goals by making explicit connections to the approaches and reasoning in selected student work and to learning goals.	Teachers: ● Use learning goals to select and sequence student work samples that target anticipated strategies and misconceptions. ● Use selected student work for discussion to advance students' understanding of key mathematical ideas. ● Follow student explanations and ask probing questions to facilitate the discourse. ● Facilitate conversations between students by: o Encouraging students to ask questions of one another; o Prompting students to justify their thinking; and o Guiding students to compare strategies used in student work ● Facilitate progress toward learning goals by making connections to approaches and reasoning in selected student work and to learning goals.	Teachers: ● Use learning goals to select student work samples that target strategies and misconceptions. ● Use selected student work for discussion to advance students' understanding of mathematical ideas. ● Ask probing questions that promote critical thinking and guide student-to-student talk. ● Ask students to justify their thinking and to compare strategies used in student work. ● Make connections to approaches and reasoning in student work and learning goals.	Teachers: ● Use student work samples that target one or more strategies to help move students forward in their understanding of mathematical ideas. ● Ask leading questions that direct student thinking and guide some student-to-student talk. ● Ask students to share their thinking about their own work and the work of others. ● Make connections between the approaches and reasoning in student work.	Teachers: ● Use student work samples to help students understand mathematical ideas. ● Ask leading questions that direct student thinking and guide teacher-to-student talk. ● Ask students to share their thinking about their own work. ● Make connections between the approaches in student work.

[1] Student work samples should include rich tasks that require high-level thinking and reasoning, have multiple layers of complexity, allow for multiple entry points and solutions/strategies, and promote active inquiry, discussion, and collaboration through context.

[2] Goals, communicated in student-friendly language, encompass the range of what students should know and be able to do based on College and Career Ready Standards for Mathematics (CCRSM). Goals may address multiple standards or only a portion of a standard.